

**Minutes of the Stakeholders Advisory Committee Meeting**  
**Washington, DC**  
**October 28, 2004**

The thirteenth meeting of the Stakeholders Advisory Committee (SAC) was held to discuss the status and direction of the Air Pollution Control Technology (APCT) Verification Center of the U.S. Environmental Protection Agency's (EPA) Environmental Technology Verification (ETV) program. This program is being conducted through a cooperative agreement between EPA and RTI International<sup>1</sup>. Mr. Andrew Trenholm, RTI Director for the APCT Center, chaired the meeting. The agenda (Attachment A), a list of attendees (Attachment B), and meeting presentations are appended.

**Action Items**

Set up a follow-up Task Group: Dr. Praveen Amar, Mr. Robert Bessette, and Mr. Richard Van Frank to assist with review of the Center's Business Plan.

Mr. Bessette will provide the SAC with an example of a partnership agreement.

The next SAC meeting is tentatively scheduled for March 2005, US EPA, RTP Main Campus, Research Triangle Park, NC.

**Introduction**

Mr. Trenholm called the meeting to order at 8:35 a.m., reviewed the agenda, and made several announcements about the conduct of the meeting. All attendees introduced themselves.

**ETV Program Update**

Ms. Teresa Harten, EPA, presented an update on the overall ETV program and her presentation slides are available as Attachments C & D. She outlined the objectives of the ETV program and how it can help solve high risk environmental problems. She also reviewed what the verification program can and cannot do and what is involved in the overall process.

Ms. Harten then expanded on how the ETV program is being redesigned to redirect its focus on high risk agency needs. The objectives of this redesign include:

1. prioritizing by risk, Agency needs, research and development (R&D), and market gaps,
2. project outcomes,
3. balancing risk and R&D needs with collaborative cost sharing,
4. integrating sustainability, and
5. maintaining a public/private partnership

One of the Agency needs includes participating in the new agency-wide Environmental Technology Center (ETC).

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<sup>1</sup> RTI International is a trade name of Research Triangle Institute.

The ETC was established to coordinate and focus the Agency's technology programs to (1) improve results of core regulatory, enforcement and voluntary programs and (2) facilitate innovative technology solutions to environmental problems and challenges, particularly problems with multi-media implications. The problems addressed will be clearly related to the Agency's strategic plans, and focused on defined environmental outcomes.<sup>2</sup>

Of the 3 options that have been considered for the redesign, Option 3 has been recommended. This option retains the two highest priority centers, which are monitoring and air. Ms. Harten emphasized that the APCT Center and the ETV Advanced Monitoring Systems Center would not be changed and that the Air Pollution Control Technology (APCT) program was being kept due to the strong relationship between air pollution control technologies and risk reduction.

During discussion it was mentioned that the ETV program has 5 in-depth case studies to be completed. Mr. Amar emphasized that there are new, emerging technologies but that they are not necessarily innovative. It was also emphasized that there needs to be coordination between EPA's Office of Air Quality Planning and Standards (OAQPS) and the ETV.

#### **APCT Center Update**

Mr. Trenholm reviewed the events that occurred since the last SAC meeting held on March 5, 2003. These included a funding delay over the last 1½ years as well as personnel changes.

Agenda items that needed to be considered during the meeting were listed and are shown in Attachment E.

#### **Technology Area Updates**

Ms. Debbie Franke, RTI, presented an overview of the activities in the areas of Baghouse Filtration Products, NO<sub>x</sub>, VOCs, and Dust Suppressants. A copy of the presentation is shown in Attachment F.

##### Baghouse Filtration Products

There have been recent discussions with two companies interested in this type of testing, and there are plans to revise the protocol. Revisions would focus on expanding the scope of product types and allow more flexibility to better address user needs. Efforts are also underway to complete an International Organization for Standardization (ISO) standard for filter media performance.

##### NO<sub>x</sub>

There is currently little activity for add-on control technologies. Three companies have expressed interest in testing emulsified fuels for boilers and discussions have begun with OAQPS about a diesel voluntary retrofit program for stationary diesel engines.

##### VOCs

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<sup>2</sup> U.S. Environmental Protection Agency, Environmental Technology Opportunities Portal.  
<http://www.epa.ov/etop/tc/>

After a review of the status of several technologies that are currently in the system, there was a discussion about the possible applications for these technologies.

#### Dust Suppressants

Ms. Franke reviewed the background and protocol of verification tests that were conducted at Fort Leonard Wood, MO and Maricopa County, AZ and what the future holds for this type of testing. She then reviewed the factors that affect the tests, performance factors that are specified in the ETV Test Protocol, and the criteria for laboratory tests in the ETV Test Protocol.

The fall 2001 Fort Leonard Wood test involved a four-test series over a period of three months. A slide showing the amount of dust created before and after application of one of the test products clearly illustrated how effective this technology can be. Ms. Franke gave examples of some of the problems encountered during the testing and talked about possible solutions to these problems.

Ms. Franke talked about the financial and road-control conditions needed for further tests of dust suppressants.

Mr. Van Frank emphasized that there needs to be sampling in ditches to determine how much runoff is created by the different types of dust suppressants and of the product after it has sat on the road for an extended period of time. He also expressed concern about the ecological effects of the breakdown products of the dust suppressants and the movement of the suppressants on real world, varied substrates/soils in varied climates.

#### **Mobile Sources**

Ms. Jenni Elion, RTI, presented an update on verification of technologies for mobile sources and her presentation slides are available in Attachment G. She gave an overview of the program and the way it is structured and talked about the technology groups that are included in the mobile sources category.

Ms. Elion reviewed the completed generic verification protocols (GVP) which cover add-on retrofit devices, selective catalytic reduction systems, and fuel modifications. She gave an overview of the approach currently used for testing and noted that Southwest Research Institute is the only testing organization used for conducting the tests. She also reviewed the verification process and talked briefly about the verifications that have already been completed. There was discussion about the differences between the engine dynamometer approach used by the APCT Center ETV program and the California Air Resources Board's (CARB) use of chassis dynamometer testing.

She then reviewed the verifications currently in progress and discussed the types of technologies that are being presented. She also reviewed the APCT Center's interaction with other agencies including the Texas Commission on Environmental Quality (TCEQ) and CARB. She elaborated on the status of different devices and fuels and reviewed emissions reduction through the use of selective catalytic reduction (SCR) technologies.

There was discussion on the topic of making modifications to test plans and if they can be made as they come up since any modifications would possibly involve revising the protocol(s)

Future work includes completing SCR test and quality assurance plan (T/QAP) and the fuels T/QAP, revising the GVPs, developing guides for the verification process for applicants, and presenting papers.

### **Voluntary Diesel Retrofit Program**

Mr. Dennis, Johnson, EPA, gave a presentation on EPA's Voluntary Diesel Retrofit Program (VDRP) and the presentation slides are shown in Attachment H. The topics covered include the role of the Office of Transportation and Air Quality (OTAQ), information about the VDRP, retrofit technology verification, and VDRP and ETV coordination.

Mr. Johnson gave a brief overview of the work performed by OTAQ and he talked about the factors that affect the different types of emission testing.

The VDRP is a voluntary program that was created to improve the performance of existing diesel vehicles and equipment. Mr. Johnson talked about factors that have to be considered in building a market for clean diesel concepts. They include:

1. accelerating the delivery of ultra-low sulfur diesel fuel (ULSD),
2. forging business partnerships and relationships, and
3. investing EPA resources to accelerate market growth.

He gave a definition of the term "retrofit technology" and changes that can be made to an engine that meets this definition. He then reviewed the availability of ULSD and maps showing the availability of ULSD and locations of EPA funded projects that are currently underway.

### **Program Goal and Approaches**

Mr. Johnson talked about the goal of the program which is to reduce the emissions of the 11 million diesel engines in the existing fleet by 2014 and gave estimates of the number of engines in each sector.

Two approaches are being used to meet this goal. The geographic approach chooses specific locations to target and the sector approach uses incentives based on the economic structure of each sector to promote voluntary action. These sectors include school buses, freight, construction and agriculture, and ports.

### **Retrofit Technology Verification**

This topic covered the objective of retrofit technology verification which is to evaluate and quantify the emission reduction effectiveness of retrofit technology and the components of a verification. These include using appropriate testing protocols, statistical sampling methods, and durability requirements. He also reviewed the different routes to a verification and what is involved in evaluating technologies. Mr. Johnson finished his presentation with an example of a simple verification process.

### **Stationary Internal Combustion (IC) Engines**

Ms. Penny Lassiter, EPA, gave a presentation on stationary IC engines and it is shown in Attachment I. She summarized the key uses and applications of the various types of engines and stated that 62% of the power generation engines are in the 50-500 h.p. range. She also noted that 174 industry categories had recently been completed.

Ms. Lassiter reviewed the regulations affecting stationary IC engines, including

- reciprocating IC engines (RICE) maximum achievable control technology (MACT) standards,
- area source/small engine major source rule, and
- New source performance standards (NSPS).

She elaborated on how MACT impacts the RICE category and the regulations that have to be followed for compliance. She also noted that approximately 27 hazardous air pollutants (HAPs) have been measured in RICE exhaust gases and that six HAPs account for more than 85% of the total HAP emissions from RICE. These include formaldehyde, benzene, xylene, acetaldehyde, toluene, and PAH/naphthalene. Emissions limits for both existing engines and new engines were reviewed. In addition to these categories there are rules based on area sources, target HAPs, and engine size. It was noted that area source rules have more flexibility than major source MACT and that these rules can be based on Generally Available Control Technology (GACT), which considers costs. These rules are scheduled to be proposed in October 2006 for promulgation in December 2007. Ms. Lassiter then reviewed the details of the New Source Performance Standards (NSPS).

### **Stationary Source Diesel Engine Grants**

For stationary source diesel engine retrofits, \$150,000 to \$200,000 has been allocated to demonstration projects. These funds are available to public agencies and nonprofit organizations and are expected to fund two to four projects; November 9, 2004 is the deadline to apply for the grants.

### **Stationary Engine Controls and the ETV Program – CI Engines**

Ms. Lassiter spoke about how both road and non-road compression ignition (CI) engines use PM and NO<sub>x</sub> controls that can also be used with stationary CI engines and that with the non-road CI engines there are a number of classes that are also used for stationary purposes.

At the present time there are very few technologies that are specifically verified for stationary purposes, but it is expected that there will be specific requests for verified emission reduction technologies to apply to stationary IC engines.

A potential issue that has to be resolved for verification testing is the engine operating cycle to use during testing. CARB has completed a verification on a stationary engine.

There was discussion by the stakeholders about using protocols developed by CARB versus protocols developed by EPA.

### **Additional Mobile Source Test Labs**

Mr. Trenholm and Dr. Gene Tatsch (APCT Center Quality Manager) addressed the issue of having only one testing organization perform mobile source verification testing. Their presentation, shown in Attachment J, showed the steps involved in qualifying an organization to perform verifications for the APCT Center. At the present time, RTI uses one laboratory and there have not been any problems with this arrangement. However, 1) it is possible that additional capacity may be needed if the frequency of verifications increases, 2) there have been inquiries from vendors about the use of other testing organizations, and 3) organizations have inquired about participating in the verification process.

Dr. Tatsch outlined the steps involved in qualifying an organization laboratory to perform verification testing. It's estimated that the resources involved in qualifying an APCT Center testing organization would require 6-12 months and the direct external cost would be in the range of \$50,000 to APCT Center for its work.

Mr. Trenholm summarized the process that's currently used and noted that an alternate path exists for other organizations to participate through the existing ETV data policy.

The discussion that followed the presentation indicated there is a perception that by having only one testing organization the process may be longer and more expensive than if multiple testing organizations were available. Mr. Trenholm responded that costs are considered and that the laboratory currently used puts a lot of quality assurance into their work. Mr. Bessette suggested that as more testing organizations become involved in the program, it may increase the overall number of companies involved and that it would be a good idea to have a testing organization geographically closer to where engines are manufactured/tested. Stakeholders provided a list of other laboratories and programs, including the Engine and Emissions Research Center, West Virginia University; the University of Houston; and the CARB verification program.

### **The ETV Business Plan**

Dr. McKenna and Mr. Trenholm presented an overview of the objectives of the ETV program and what will be needed to obtain these objectives. See Attachment K for the presentation slides. Dr. McKenna then talked about the APCT Center business plan and emphasized that the overall goal is the same as it is for the ETV program but that the focus is on APCT Center. He then listed some of the possible APCT Center business development strategies including outreach programs, setting priorities, and developing strategies.

Past activities of the APCT Center have been guided by the advice of SAC and have included technology priorities set by SAC, protocol reviews, venter marketing focus, and a targeted outreach program.

The budgetary issue is one of the main constraints the APCT Center/ETV program must consider as it is expected to balance financial and environmental outcomes. The emphasis is to maximize the environmental benefit by leveraging EPA's ETV funding. Financial goals include becoming a self-sustaining program, increasing outside funding to more than the current 30% of the total funds, and shifting the emphasis to permittees and buyers. To reach the overall goal of greater environmental benefit with less EPA funding it will be necessary to target those who receive the

most benefit from the ETV program, maximize the value for vendors, and bring together those with common goals. Dr. McKenna elaborated on ways to maximize the value for vendors. These included reducing marketing costs, making market entry faster, accelerating the permitting process, increasing buyers' comfort level, and providing verification data that meets user needs. Vendors outside of the targeted areas will be expected to pay fully for development of protocols and test plans as well as for testing.

APCT Center market considerations include defining the market, market opportunity, and business constraints. Market drivers include determining where the opportunities are; that is, programs that fund technology development, such as the Texas Commission on Environmental Quality (TCEQ) grants, the New York State Energy Research and Development Authority (NYSERDA), the Department of Defense Small Business Innovation Research (SBIR); government programs that need independent data such as VDRP; and current enforcement activities, including MACT standards and state priorities.

Other factors to consider in designing a business plan for the ETV program include deciding who needs ETV. Potential users include vendors, environmental agencies, and APCT Center buyers and/or users. Potential users can also be found through market research. Other beneficiaries include environmentalists; foreign governments, some of which have already adopted ETV; the general public; and engineering–design/build firms. It is also necessary to determine who is willing and able to pay for ETV. Potential users/buyers include government agencies, individual vendors, industry groups, and others.

The most successful areas thus far have been the diesel retrofit program and baghouse filtration products, which have attracted many national and international vendors.

#### Task Group

In response to a request from Mr. Trenholm for help in completing the business plan, Dr. Amar, Mr. Bessette, and Mr. Van Frank volunteered to become part of a task group.

#### **SAC Role**

Mr. Trenholm gave an overview of the historic role that SAC has played in the past. This is shown in Attachment L. In the past SAC has given advice on technology priorities and potential new technology areas. Also, the committee has traditionally met in the spring and fall of each year with little interaction between meetings; Mr. Trenholm asked the committee members at the meeting what their preferences were and the general consensus was to hold the meetings around the third weeks of March and September. Prior to this meeting the committee had held their semiannual meetings in the Research Triangle Park, NC and the members agreed that in the future the meetings should alternate between Washington, DC and Research Triangle Park, NC.

Potential activities of SAC include continuing to provide advice on technical priorities, APCT Center operational issues, business planning, and to assist with outreach efforts.

There was discussion about the best ways for the members of SAC to interact with each other. In addition to meetings twice a year, conference calls, e-mail reviews and discussions, task groups need to be formed to handle specific issues. There was also some discussion about

creating a web-based newsletter and the information it should contain and that the Web site needs to be updated to show the link to verified technologies.

### **Conclusion**

Mr. Trenholm thanked everyone for their participation and adjourned the meeting at 3:00 p.m.